

infer that the user is not attempting to dial a number directly. The invention may then remove the direct-dial feedback from the screen and proceed with the directory lookup operation. Conversely, if the user-entered keystroke series does not correspond to any directory record, but does correspond to a numeric sequence, the invention may infer that the user is attempting to dial a number directly. Thus, the invention may remove the directory lookup feedback and proceed with the direct-dial operation.

**[0039]** In one aspect, the invention makes the aforementioned determinations after each keystroke, so that the filtering process is iterative. As the user enters each keystroke, the invention determines which operations are still possible given the entered sequence, and adjusts the displayed feedback appropriately.

**[0040]** In another aspect, the invention attempts to make the aforementioned determinations after each keystroke, but if the user rapidly enters a sequence of keystrokes, the invention may wait until an appropriate pause in the sequence, or until a predetermined number of keystrokes are received, before making the aforementioned determinations.

**[0041]** In another aspect, the invention makes the aforementioned determinations after completion of a keystroke sequence, or when the user pauses in entering keystrokes, or when the user enters a command specifying that the determination of operation should take place.

**[0042]** In another aspect, the user may override the invention's determination, or may manually specify which operation is desired, or may manually specify a

mode of operation. Such specification may be made before, during, or after entry of the keystrokes.

**[0043]** In another aspect, feedback for each of the possible operations is displayed, or is not displayed, according to user preferences, predefined settings, or other considerations. Thus, where such feedback might confuse the user, the invention may avoid such confusion.

**[0044]** In another aspect, directory lookup is performed concurrently with respect any of several fields, such as for example last name, first name, initials, company name, and the like. Derived fields may also be included, such as for example first initial plus last name. Combination fields may also be included, such as for example first name plus last name. The selection of which fields, derived fields, and/or combination fields are to be searched on may be predetermined or may be user-configurable, if desired. The invention filters out a record only when values in all of the specified fields fail to match the entered keystrokes. In one aspect, multiple-field directory filtering is performed concurrently with direct-dial entry, as described above, until the operation the user is attempting to perform is unambiguously determinable.

**[0045]** In another aspect, the user can retract a keystroke entry, for example by backspacing. The invention returns to the state that existed before the keystroke took place. Thus, if an operation is no longer valid based on a keystroke sequence, it may be reinstated if the user backspaces. Similarly, previously eliminated directory records may reappear after the user backspaces.

## **Brief Description of the Drawings**

**[0046]** Fig. 1 is an oblique view of a device for practicing the present invention according to one embodiment.

**[0047]** Fig. 2 is a plan view of a keyboard including multiple-value keys for practicing the present invention according to one embodiment.

[0048] Fig. 3A is a flowchart depicting operation of the present invention according to one embodiment, where a directory filtering operation is initially assumed. Fig. 3B is a flowchart depicting operation of the present invention according to another embodiment, where feedback for two operations is displayed concurrently when appropriate. Fig. 3C is a flowchart depicting operation of the present invention according to one embodiment, where a direct-dial operation is initially assumed.

[0049] Fig. 4 is a block diagram depicting a functional architecture for implementing the present invention according to one embodiment.

[0050] Fig. 5 is a screen shot depicting a contacts view according to one embodiment of the present invention.

[0051] Figs. 6A through 6E are screen shots depicting an example of a directory lookup operation according to one embodiment of the present invention, where feedback for two operations is displayed concurrently when appropriate.